

Worthington side-wheel drive, multi-wheel gang.



Scotts slow-release turf fertilizer.

attributed to the earthworm management procedure developed by Peter Lees.

Development 5 - Side-Wheel Drive, Multiple Gang Mower

The side-wheel drive mower on a multiple gang frame was developed in 1914 by the Worthington Company in Pennsylvania, USA. It was a major advancement and opened the economical mowing of extensive turf areas in parks, golf course fairways, sports fields, recreational areas, and other large turfed areas.

Development 6 - Slow-Release Turf Fertilizer

The first commercially produced, slow-release turf fertilizer was marketed in 1928 by the O.M. Scott and Sons Company in Ohio, USA. It was a natural organic product developed at Ohio State University through research funded by the O.M. Scott and Son Company of nearby Marysville, Ohio. It was marketed in a large cloth bag under the name of Scotts Turf Builder®. This branded slow-release fertilizer continues to be sold today-76 years later.

Development 7 - Turfgrass Fungicide

During the late 1920s and early 1930s two fungicides for the control of a number of turfgrass diseases were developed by Dr's John L. Monteith and Arnold S. Dahl of the USDA-USGA Arlington Turf Research Center in Washington, D.C., USA. The first truly effective



Turfgrass fungicide development by Monteith and Dahl.



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fungicide controls for the control of *Microdochium* patch, *Rhizoctonia* brown patch, *Sclerotinia* dollar spot, and *Typhula* blights involved the use of inorganic mercury and cadmium compounds, which continued in use for 40 years.

Development 8 - Rotary Mower

In the 1930s the first powered rotary mower was developed by Power Specialities Ltd. of Slough, England, UK. This resulted in the capability to mow minimal maintenance turfs at a higher height and a less frequent interval, which are conditions in which reel-type mowers are not effective.

Development 9 - Pop-up Sprinkler Head

In the early 1930s the first underground pop-up sprinkler head was developed by the Thompson Company in California, USA. This was a major advance compared to the numerous types of individual, fixed, hose-end sprinklers of the oscillating or rotating type previously available, as they had to be manually moved frequently for effective irrigation.

Development 10 - 2,4-D: Selective Broad-Leaved Weed Control

In the mid-1940s the first truly effective herbicide for the selective removal of broad-leaved weeds from perennial grasses was



Pop-up sprinkler heads, by Thompson Co.



Tom Mascaro's powered coring machine.



Tom Macaro's powered vertical cutting machine.

developed by Gretchen Fannie-Fern Davis in Washington, D.C., USA. Some of the earliest turfgrass tests were conducted on the turfed mall area between the U.S. Capital and Washington Monument. The development-use strategy for 2,4-D on turfgrasses was a major event. It remains a key herbicide in the management of quality turfgrass areas more than 50 years later.

Development 11 - Powered Coring Machine

In 1946 the first powered coring machine was invented by Thomas C. Mascaro in Pennsylvania, USA. A manual three- to four-tined coring unit was developed in England in the 1920s. However, it was not a widely used practice because of the very intense manual labor involved. It was not until the development of the

mechanically-powered, hollow-tined coring unit by Tom Mascaro that extensive coring of intensively trafficked turf areas come into widespread usage, and continues to be used.

Development 12 - Vertical Cutting Machine

In 1952 the first powered vertical cutting machine was developed by Thomas C. Mascaro of Pennsylvania, USA. Thatch had been a continuing problem on turf areas for a long time, and there was no truly effective way of selectively removing an excessive accumulation of thatch, other than the total physical removal of the turf-thatch profile with a sod cutter and re-establishment. For the first time in 1952 there was an efficient, effective method for vertical cutting into the turf canopy and removing the excess, dead organic

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Year (circa)	Contribution/Invention	Contributor
(1) 1830	reel, mower, mechanical hand pushed	Edwin Beard Budding, England UK
(2) 1843	cylindrical clay tile drains	England, UK
(3) 1880	weed-free grass seed processing, testing and marketing	O.M. Scott, Ohio, USA
(4) 1890	irrigant for earthworm management/control	P.W. Leeds, England, UK
(5) 1914	side-wheel driven mowers on multiple-gang frame	Worthington Co., Pennsylvania, USA
(6) 1928	slow-release (organic) turf fertilizer	O.M. Scott & Sons Company, Ohio, USA
(7) 1930-32	turfgrass fungicide development	J.L. Monteith & A.S. Dahl, Washington, D.C., USA
(8) 1930	powered rotary mower	Power Specialities, Ltd., England, UK
(9) 1930-35	pop-up sprinkler heads	Thompson Co., California, USA
(10) 1945	2,4-D selective broadleaf weed control	G.F.F. Davis, Washington, D.C., USA
(11) 1946	powered coring machine	T.C. Mascaro, Pennsylvania, USA
(12) 1952	powered vertical cutting machine	T.C. Mascaro, Pennsylvania, USA

Table 1. 12-KEY EVENTS IN THE TURFGRASS DISCOVERY AND INVENTION ERA

material without totally destroying the living turf canopy. The basic design of the original vertical-cutting unit continues to be the standard in use to this day.

Summary

In our modern times of the 21st century some of these developments seem of minimal significance. However, at the time they were developed or invented these contributions were very major advances in improving the quality and lowering the cost of turfgrass maintenance. Modern turfgrass science evolved gradually based on these early inventions and art-dominated trial-and-error developments between 1800 and 1952. These pioneering individuals and companies need our utmost respect for their very important contributions.

A paper summarizing the key early inventions and art-related developments in the evolution of turfgrasses has not been addressed. Thus, over the past two decades this author has spent considerable time in the major libraries in the United States and

the United Kingdom, including the Royal Horticultural Society, Kew Gardens, British Museum, Victoria and Albert Museum, and various Sports Association libraries. Through extensive study of the limited literature from a large number of unrelated writings over hundreds of years, this author has assimilated and presents the following chronology of key turfgrass developments in the early years from 1830 to 1952. The criteria for their selec-

tion included the impact on all types of turf use and not just one segment such as golf turf.

This topic was first formally presented as a keynote address at the 9th International Turfgrass Research Conference in Toronto, Ontario, Canada, in July 2001. It is derived from a draft of a book on the history of turf being presented by J.B. Beard. ©2002 by James B. Beard, 1812 Shadowood Drive, College Station, Texas, USA 77840. ♣



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You Can't Take the Country Out of the Boy

By Lori Ward Bocher



After years of saying nice things about others, helping others, featuring others in his prized publication, *The Grass Roots*, Monroe Miller's time has come. Now it's time for 'others' to give back the same. And while it's easy for 'others' to heap accolades on Monroe, it's not so easy for the veteran golf course superintendent to accept them. Modest and humble, he's truly a man who would rather give than receive.

"I am who I am," Monroe admits. And golf course superintendents, turf professionals, friends and family are glad that he is.

As 99 percent of the readers of *The Grass Roots* already know, on February 13 Monroe received the USGA 2004 Green Section Award. This prestigious award is given annually to someone who has made significant contributions to the game of golf through work with turfgrass. Monroe has been the superintendent at Blackhawk Country Club in Madison since 1973.

"Oscar Peterson, who used to work for me, called me up and said, 'Well, gees, Monroe, if you can win that Green Section Award, anybody can.' And that's the beauty of it," Monroe says. "You don't have to have umpteen degrees or a pedigree that's a mile long. Somebody just needs to look at what you've done and say that it's been beneficial."

In spite of everything beneficial he's done for the golf and turf industries, that's not how Monroe sees himself. "If somebody asked me, 'What single phrase identifies you the best?' I wouldn't say I'm a golf course superintendent. I wouldn't say I'm a Wisconsin grad or anything else. I'd say the thing I'm most proud of. *I'm a farm kid*," Monroe proudly states. "My wife, Cheryl, once said to me, 'You think every kid who was ever raised on a farm is perfect, don't you?' Yeah, I guess that's true." Living proof of the old adage, 'You can take the boy out of the country, but you can't take the country out of the boy.'

Life starts in Madison...

Farm boy or not, Monroe was actually born in Madison in 1946 while his father, Frank, finished his last two years at the UW-Madison College of Agriculture after serving in World War II. But he was raised on a farm in southwest Wisconsin near Fennimore. "When I was still quite young, my father and mother (Virginia) decided that they wanted to raise their kids on a farm. So they sold a successful business dad had started, bought a farm back in their home town, and raised their family on a dairy, beef and hog farm." Both of his parents are still alive.

When Monroe graduated from high school in 1964, he wasn't sure what he wanted to do. "I just knew I

didn't want to milk cows," he points out. At the UW he tried a survey course in engineering and decided he didn't like that, either. He did like his soils course with Dr. J.R. Love. "One day in class he made an announcement about a job at Nakoma Golf Club. I saw him after class, he drove me out to Nakoma to meet with the superintendent, and I took the job.

"After my first day of working there that summer, I knew that's what I wanted to do," Monroe recalls. "It had machinery. I worked outside. There was a physical aspect to the job. I could see in a short period of time that this was the perfect compromise for me - similar to working on a farm, but I didn't have to deal with Holsteins."

Mandatory military service...

When Monroe graduated from the UW in 1968 with a degree in soils, his first choice was to attend graduate school. But Uncle Sam had another idea, and Monroe was drafted into the Army in the midst of the Vietnam Conflict. After basic training at Ft. Campbell, Kentucky, Monroe was selected for the Military Police and shipped to Fort Gordon, Georgia, for MP training. "I just barely made it," he points out. "The minimum height requirement was 5'10", and I was 5'10". I was the smallest MP you could have."

Once through MP training, Monroe 'barely made it' in another sense. He recalls the episode like it was yesterday. "Our whole company is lined up alphabetically," he says. "They start with 'A' and these guys are going to bases in the U.S. and Europe. Then they get down to 'Miller, M.' I take one step forward and this old company first sergeant who was reading off the orders says to me, 'Private Miller, are you a tiger, boy?' I said 'Yes.' And then he said to me, 'Well, you better be, boy, 'cause you're going to Nam.' I almost passed out. Every single person from me to the end got shipped over to Asia. So I missed it by one."

Monroe married his college sweetheart, Cheryl, in 1969 just before going into the military. "I've only cried a few times in my adult life," Monroe points out. "One of them was when Cheryl took me to be shipped out to Vietnam. I figured I was doomed. They were killing 500 GIs a week over there. I cried like a baby until I got on the plane."

In Madison to stay...

Fortunately, Monroe came home alive from his tour of duty in Vietnam, July 1969 to October 1970. He immediately started graduate school at the UW. "Doc Love had me all registered and ready to go," he recalls.

Monroe was in graduate school through 1972, but he never wrote his thesis so he never got an MS degree. While in graduate school he worked at Maple Bluff Country Club. And he and Cheryl lived in the Eagle Heights graduate housing which is just a stone's throw from Blackhawk Country Club. Their first two daughters were born during this time.

"It was a short bike ride from Eagle Heights to Blackhawk," Monroe recalls. "We'd bike up there and sit on Blackhawk Drive overlooking the golf course. I can remember thinking many times, 'Wow. Lucky guy who is the superintendent here.' I actually had that dream come true.

"I started here on January 1, 1973," Monroe continues. "One of the members had called Doc Love and told him they needed a superintendent with college training. He told them, 'I've got just the man for you.' After interviewing there, I got the job."

And he's been there ever since, for 31 years, almost unheard of in his business. Why has he remained at Blackhawk all of these years? He has many reasons.

"First of all, it's a beautiful piece of property," Monroe answers. "It's right on the shores of Lake Mendota. I think the view from our clubhouse is one of the prettiest in North America. I like the stands of native oak and hickory. I have trees here that are over 400 years old! They were marker trees for Native Americans. We're on the National Park Service's list of historic places in America because of the effigy and burial mounds.

"You could know nothing about golf and take a walk on the course and think, 'Wow, this is pretty.' Whenever I get depressed and need a little morale boost, I drive up by our putting green, put my feet up on the golf cart, soak in the view, and say, 'I wonder how my friend the attorney is doing in his little cubbyhole office downtown.' I take in a breath of fresh air. Pretty soon I'm refreshed and ready to go. It's just an extremely pleasant place."

Great place to work and live ...

There are more reasons Monroe has stayed at Blackhawk. "For all of the years I've worked here, Blackhawk has attracted exceptionally pleasant people to work for," he says. "And I view it as an advantage that this is a golf club. Golf is what matters. It's a classical course, not a development with houses lining the fairways. And we are given everything we need to provide a quality golf course.

"And Madison is a terrific town for raising a family," he continues. "It has the advantages of a metropolitan area, yet I can be out in the country in 10 minutes. I live out in the country. I can smell cow manure in the morning. But I can be to work in 10 minutes. Plus, I've always valued and treasured my alma mater. I can walk to the UW in 15 minutes and drive there in 5. I can do everything I need to do from here.

"I've had opportunities to go elsewhere," Monroe admits. "But I was never interested. I didn't want to move out of state. I was less interested in financial gain and more interested in quality of life. Anything I want to do I can do very, very nicely from Blackhawk."

And Blackhawk has always been very supportive of Monroe's many extra-curricular activities. "In every review I've gotten, I was complimented for my outside participation and encouraged to continue," Monroe points out. However, he's quick to note that "work always comes first. I never work on *The Grass Roots* at work. I make many trips to Kramer Printing in the morning before work or at night before supper. There will be 100 consecutive days during the fat part of the season where I'm here every single day, regardless of what I'm involved in. The work gets done first. All the other things fall into place when I have time."

The Grass Roots...

Speaking of those 'other things,' none take more time, energy, creativity, and love than *The Grass Roots*. Monroe has been editor of this award-winning publication since 1984. "I was president of WGCSA at the time and Danny Quast was editor. He had started it a few years before," Monroe explains. "I told him I

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wanted to participate in *The Grass Roots*. The man was so relieved that somebody actually offered to help. By March or April I was in charge."

Why did Monroe gravitate to *The Grass Roots*? "English was always one of my favorite subjects," he answers. "I used to pick sentences out of books and diagram them for fun. Writing has always been a part of my personality. And working on *The Grass Roots* is a labor of love. I do that instead of bowling or golf."

For 20 years in a row now, *The Grass Roots* has received the best chapter publication award from the GCSAA. How does he put it together? First, it takes 125 hours per issue, Monroe calculates. "You ask Cheryl. She would hardly recognize me at home without a yellow legal pad," Monroe says. "I think about it all the time. I make notes constantly. I'm never short of article ideas. When I'm asked how I generate my ideas, I tell people that I have a list of 100 topics and different ways to look at them. Generating article ideas isn't difficult for me."

Monroe uses his yellow legal pads and No. 2 pencils to do more than jot down article ideas. He also writes all of his first drafts with them. "I still write it all out in long hand, and then put it in the word processor," he admits. "I like yellow legal pads and No. 2 pencils. It's one of those odd things I can't explain, but I just like doing it that way."

Fun with the 'Back Nine'...

One of his regular columns, 'Tales from the Back Nine,' is a fun endeavor for Monroe. "It's totally fictional, totally fictional," he reminds readers. "It's just strange situations I think up. One day I'm going to write about a truckload of hogs that has an accident and the hogs end up on a golf course. These circumstances and ideas just fall on me. I don't know where it all comes from."

Two 'Back Nine' columns stand out in Monroe's memory. While most of these articles are humorous, one was quite emotional; 'The Mayor' was a superintendent who was mayor of his town. "That one was reprinted all over the country," Monroe recalls. The second one told about an imaginary trip to Scotland to visit golf courses and find his Scottish roots. "I must have had 50 people ask me about my trip to Scotland," Monroe remembers. "I enjoyed it *enormously*."

Monroe is especially grateful to the UW faculty members who contribute to *The Grass Roots* on a regular basis. "It's such a great extension function for the faculty, and I think they recognize it for that. They're so willing to participate," Monroe says. "Their advice has always been inspiring. I told Wayne Kussow that if he took all of his articles and collected them, he'd have a great book, 'Golf Course Soils by W.R. Kussow.' That's how good some of that material is."

One of the greatest improvements to *The Grass Roots* has been the addition of customized artwork on the cover. "I love all of Jenny's covers," Monroe says.

"With an attractive cover, people look at it and want to see what's inside. I think the one I like best is the drawing of the Old Tom Morris statue."

"My goal with *The Grass Roots*," Monroe says, "has always been to make it a publication that people could pick up and (a) have some idea of what we do in our profession, and (b) will be favorably impressed, or at least not react negatively. My desire to portray a positive image of golf course superintendents has motivated me tremendously to turn out a quality publication with pertinent material."

Wisconsin golf & turf activities...

Indeed, Monroe's greatest contribution to the WGCSA has been serving as editor of *The Grass Roots* for 21 years and counting. But he has also served in all offices except treasurer, including two years as president.

Another way Monroe has left his mark on the turf industry is by being a founder of the Wisconsin Turfgrass Association and by being one of the main movers and shakers behind the building of the O.J. Noer Turfgrass Research and Education Facility. "Our main goal in starting the WTA was to support turfgrass research in Wisconsin," Monroe says, adding that he has been on the board of directors since its inception. "The Noer Facility followed from that. Our turf researchers were driving all over Wisconsin trying to find places to do research. Their time is too valuable to be spent on the road. Besides, everybody else has a turf research center, why shouldn't we?"

Monroe and his good friend, Tom Harrison (superintendent at Maple Bluff Country Club), were very involved in the construction of the Noer Facility - so much so that Monroe still feels like a proud papa. "It's like it's *ours*," he says. "I'm sure it drives Tom Schwab (director of the Noer Facility) nuts because we still go out there and point out that walls need to be painted, or carpet needs to be replaced, or the shop needs to be cleaned up. But he's pretty good natured about it."

"We used to be a lot worse than we are now," he admits. "We used to go out there and inspect everything because we had worked so hard to get it. It's a beautiful place. Any visiting turf researchers think it's just wonderful."

National involvement...

When it comes to the GCSAA, Monroe has served on numerous committees, but never in an office. "I'm not very political," he says. "I'm more interested in getting things done, in completing a goal. I'm more interested in results, not the process to get there. But participating in the process is at least interesting."

On a national level, Monroe has been on the USGA Green Section Committee since 1986. The committee doesn't meet very often; instead, members work to promote the improvement of golf turf by promoting Green



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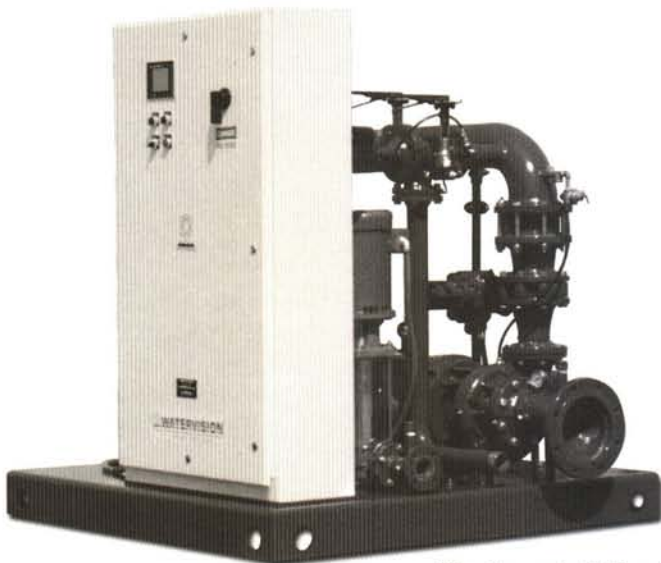
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